



Cosmic Rays and Neutrinos with POEMMA and EUSO-SPB2

Clinching Space to Open a New Gateway into Fundamental Physics

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Probe of Extreme Multi-Messenger Astrophysics

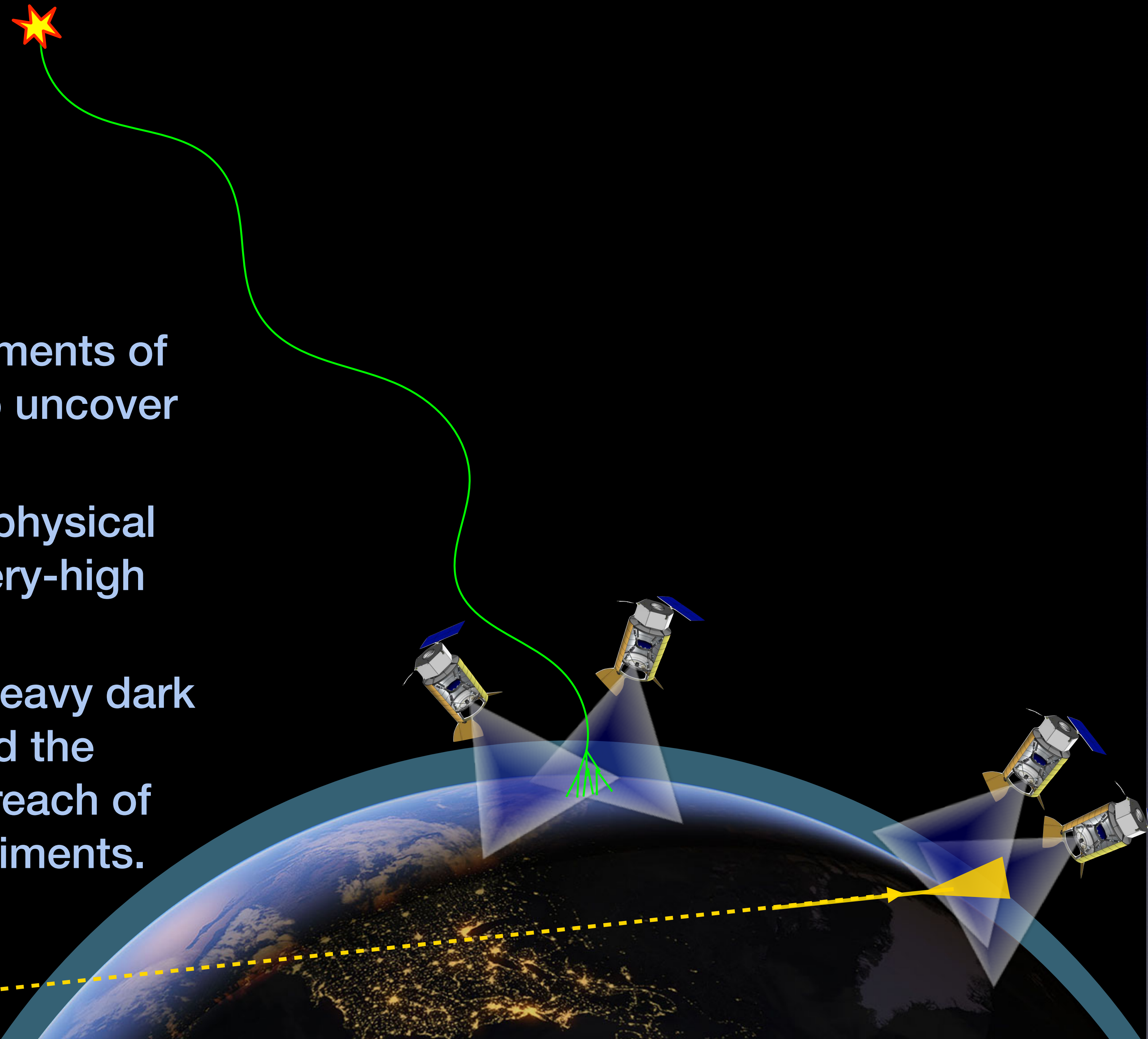
A multi-messenger probe to perform transformational measurements of UHECRs and cosmic neutrinos.

Collaboration: 70+ scientists from 21+ institutions and > 10 countries and leveraging experience from OWL, JEM-EUSO, Auger, TA, VERITAS, CTA, Fermi, and Theory



Science Goals:

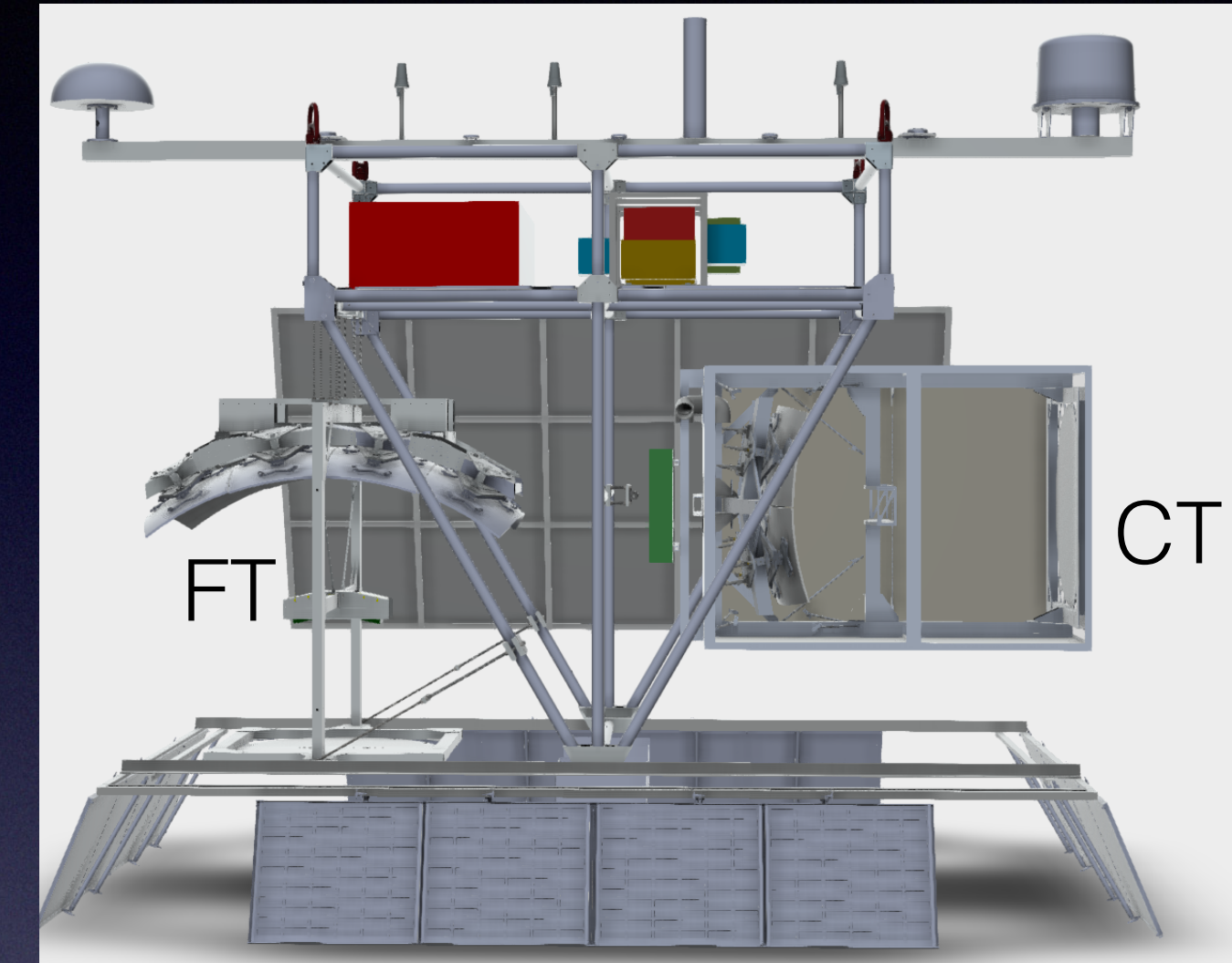
- * Perform high statistics measurements of ultra-high energy cosmic rays to uncover their sources.
- * Pioneer rapid follow-up of astrophysical transients via observations of very-high energy neutrinos from space.
- * Search for signatures of super-heavy dark matter and other physics beyond the Standard Model, extending the reach of terrestrial particle physics experiments.



EUSO-SPB2

Extreme Universe Space Observatory on a Super Pressure Balloon 2

- * Pathfinder project for POEMMA and other suborbital and space-based experiments using the fluorescence and optical Cherenkov techniques.
- * Consists of 2 innovative telescopes—fluorescence telescope for observing UHECRs and a Cherenkov telescope for observing above-the-limb CRs and Earth-skimming ν_τ 's
- * Launch planned for Spring 2023 from Wanaka, NZ
- * Potential for 100-day flight at 33 km altitude



Collaborators: University of Chicago, Colorado School of Mines, NASA/GSFC, NASA/MSFC, University of Alabama, Huntsville, Lehman CUNY, Georgia Tech, ASI, INFN (Rome, Torino, Palermo, Napoli), CNES (APC-Paris), RIKEN (Tokyo), et al.